United States Department
of Agriculture

Natural Resources
Conservation Service

Lakewood, Colorado

RWA 10190005

February 2010

St. Vrain Watershed

Hydrologic Unit Code 10190005

Rapid Assessment

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Introduction

Background Information

The Natural Resources Conservation Service (NRCS) is encouraging the development of rapid watershed assessments in order to increase the speed and efficiency generating information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers.

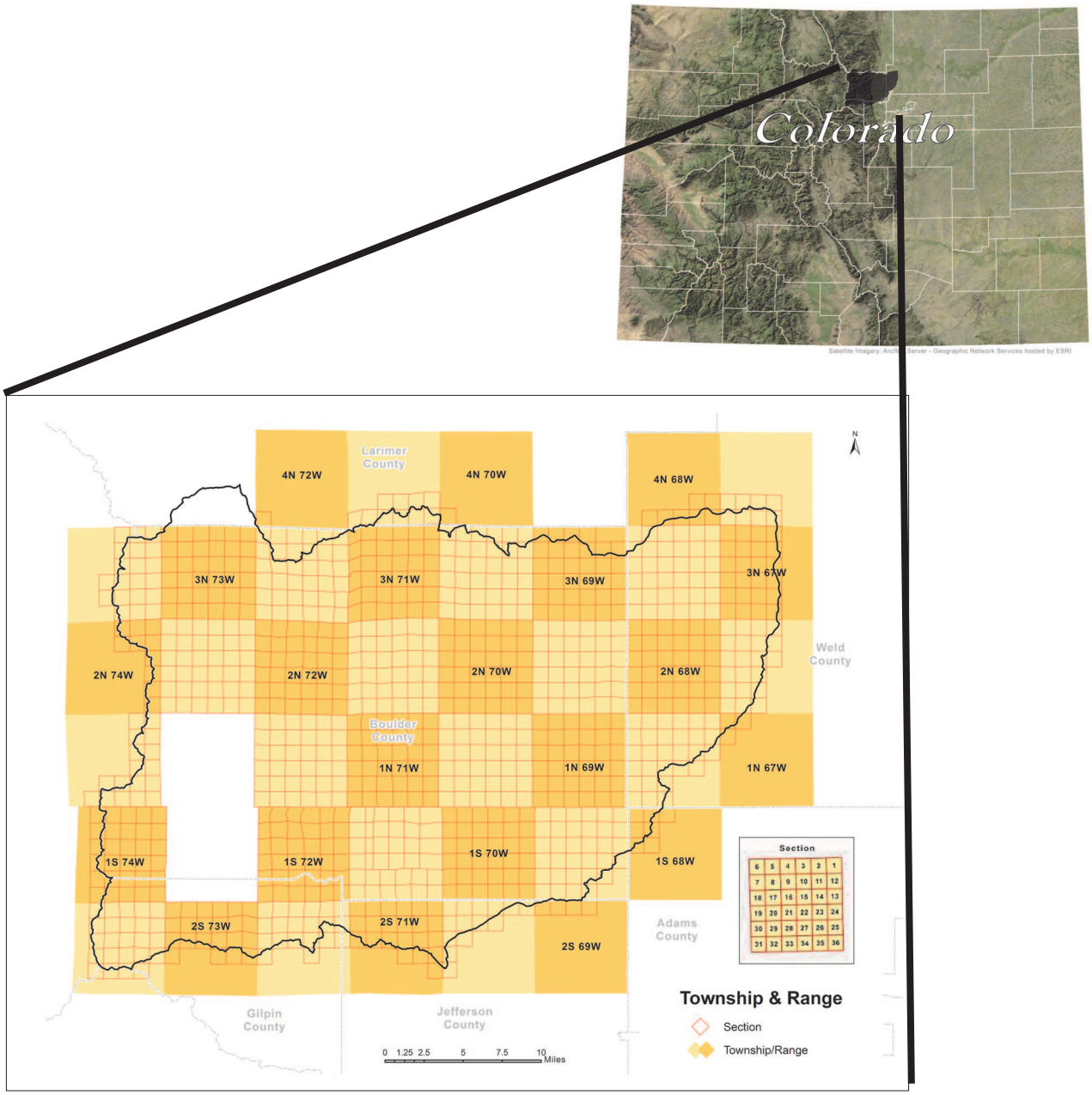
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

Benefits of these Activities

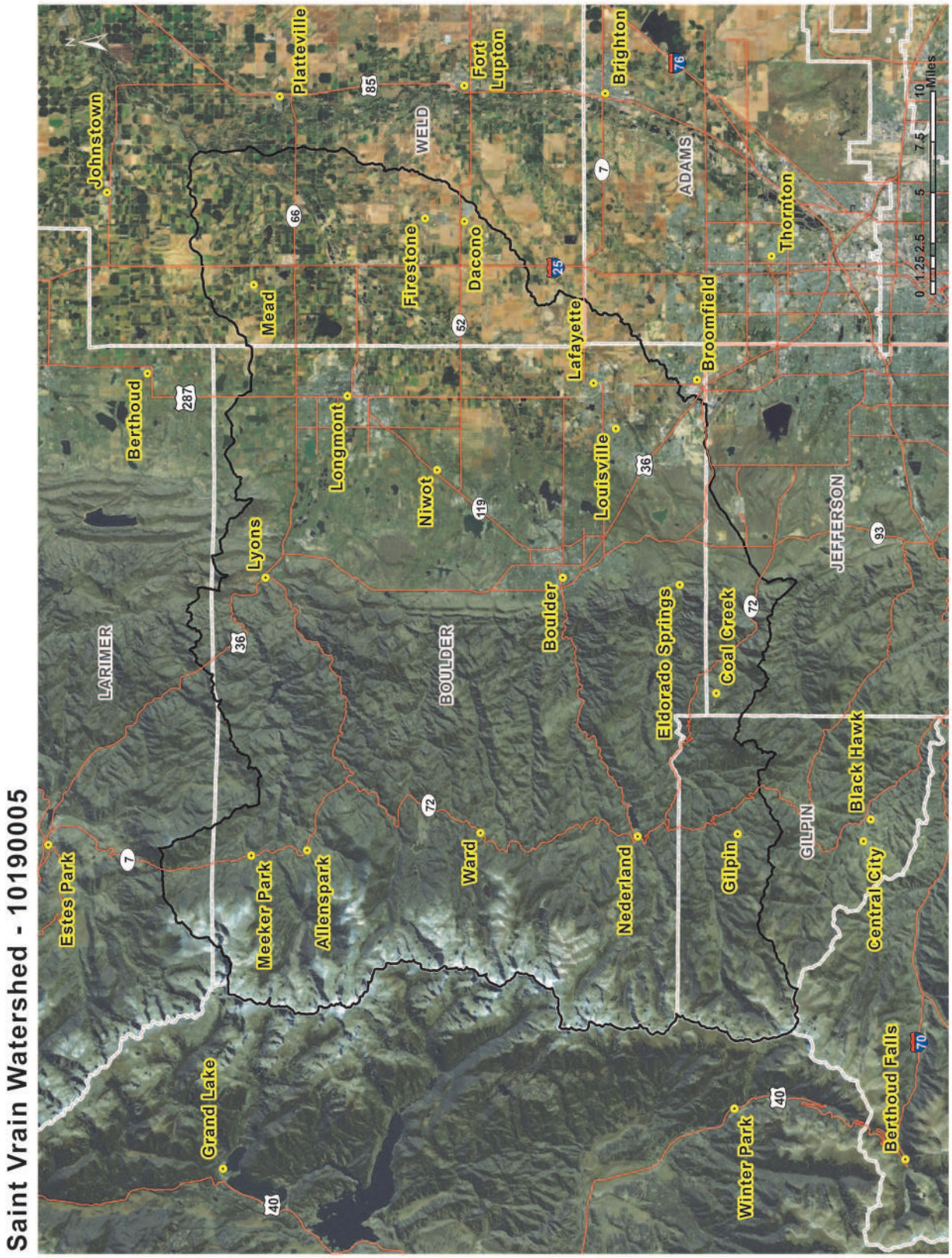
While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

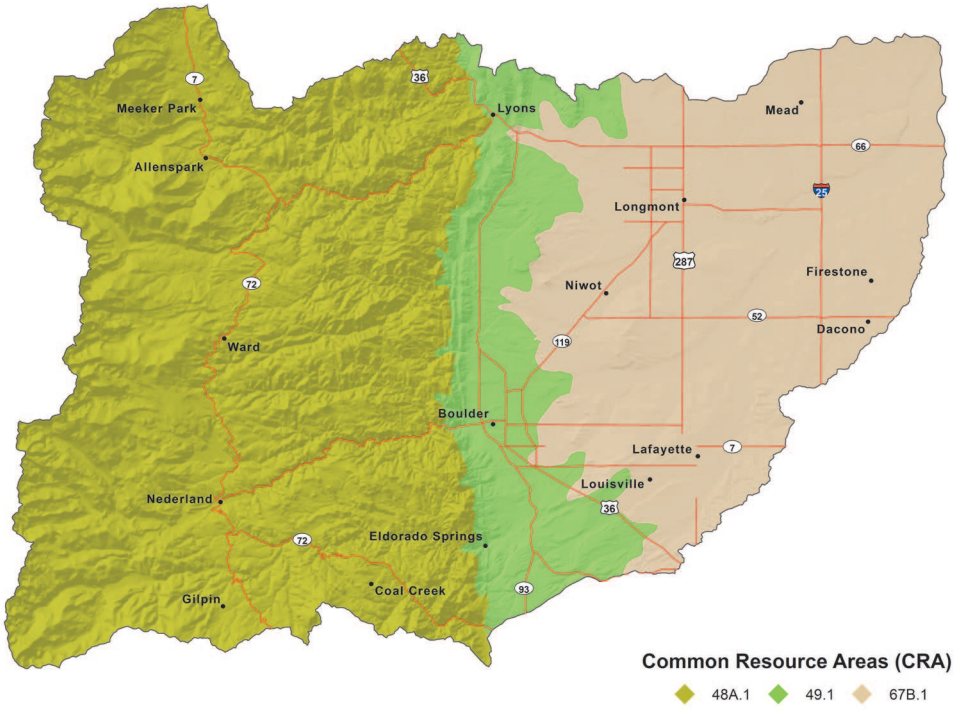
- Quick and inexpensive tools for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis but these activities are part of standard requirements for use of best management practices (BMPs) and conservation systems
- Identifying where further detailed analyses or watershed studies are needed
- Plans address multiple objectives and concerns of landowners and communities
- Plans are based on established partnerships at the local and state levels
- Plans enable landowners and communities to decide on the best mix of NRCS programs that will meet their goals
- Plans include the full array of conservation program tools (i.e. cost-share practices, easements, technical assistance)

Rapid Watershed Assessments provide information that helps land-owners and local leaders set conservation priorities.



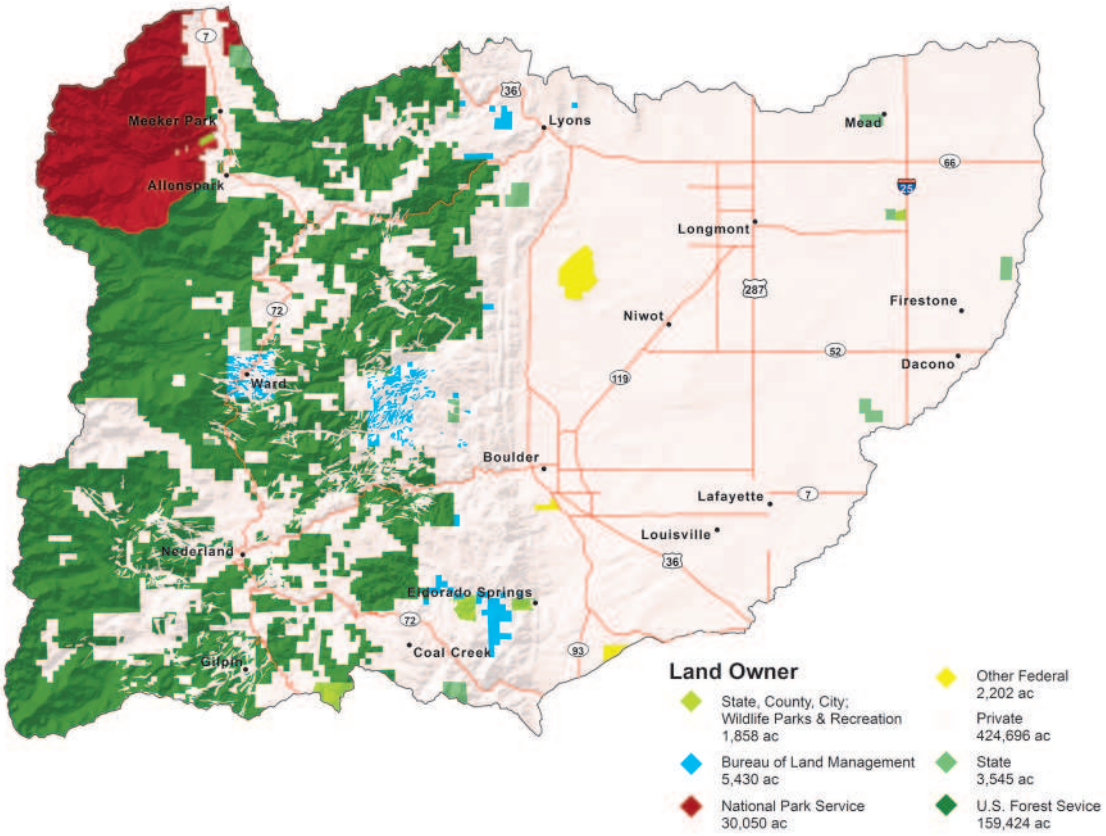
County	County Acres	County Acres in ST VRAIN Watershed	% of County in the Watershed	% of Watershed in the County
Boulder	473,815	460,864	97.3%	73.5%
Broomfield	21,454	5,529	25.8%	0.9%
Gilpin	96,045	44,896	46.7%	7.2%
Jefferson	494,626	17,287	3.5%	2.8%
Larimer	1,684,151	8,944	0.5%	1.4%
Weld	2,568,765	89,562	3.5%	14.3%
		627,082		

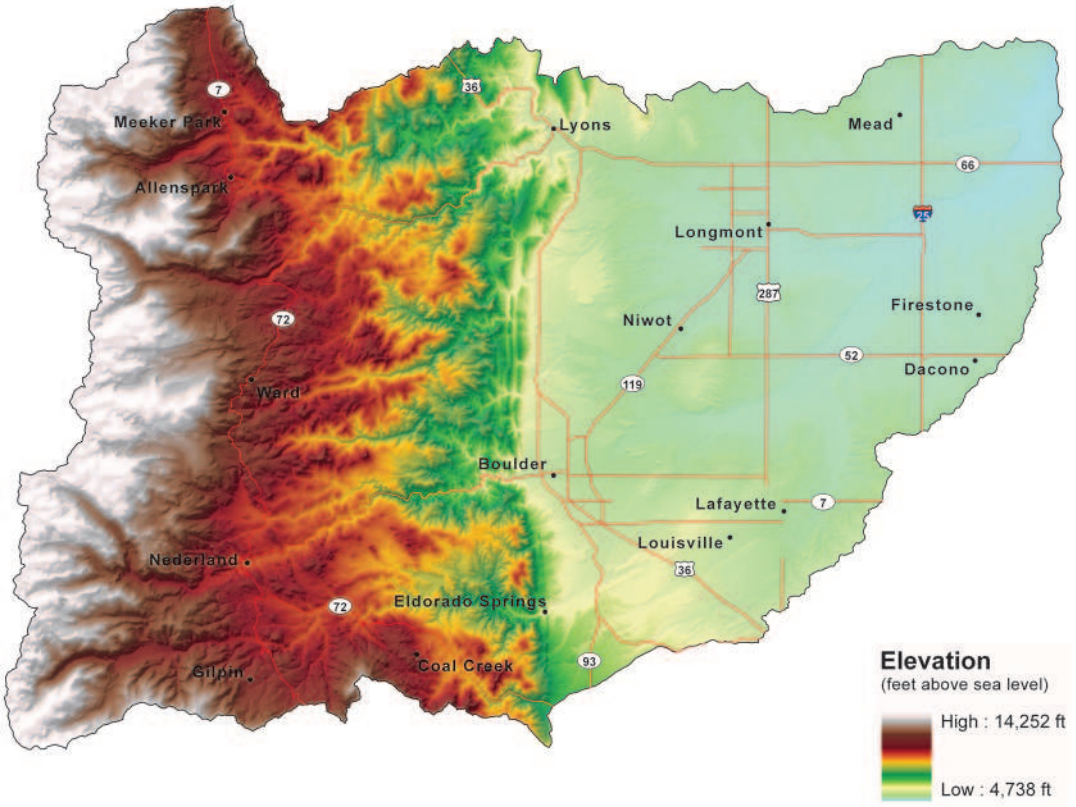

Saint Vrain Watershed - 10190005
Johnstown
Platteville
Fort Lupton
Brighton
WELD
ADAMS
Mead
Firestone
Dacono
Thornton
Broomfield
Lafayette
Berthoud
Longmont
Louisville
Lyons
Niwot
Boulder
LARIMER
BOULDER
JEFFERSON
Eldorado Springs
Coal Creek
Estes Park
Meeker Park
Allenspark
Ward
Nederland
Gilpin
GILPIN
Black Hawk
Central City
Grand Lake
Winter Park
Berthoud Falls
0 1.25 2.5 5 7.5 10 Miles

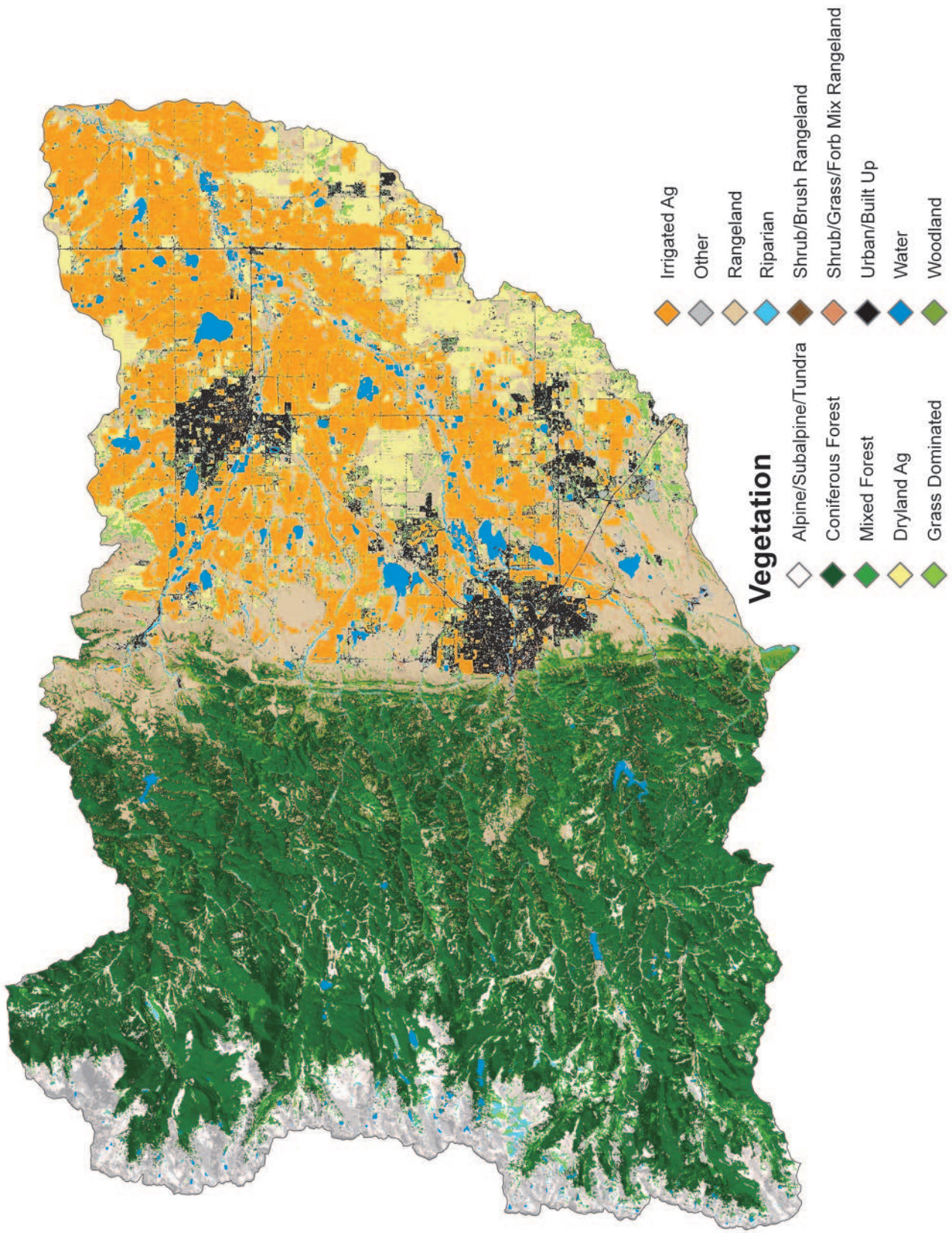


Common Resource Areas (CRA): Geographical areas where resource concerns, problems, and treatment needs are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographical boundaries of the common resource area.

MLRA	CRA	CRA NAME	CRA DESCRIPTION
48A	**48A.1**	Southern Rocky Mountains - High Mountains and Valleys	This area is best characterized by steep, high mountain ranges and associated mountain valleys. The temperature regimes are mostly frigid and cryic; moisture regimes are mainly ustic and udic. Vegetation is sagebrush-grass at low elevations, and with increasing elevation ranges from coniferous forest to alpine tundra. Elevations range from 6,500 to 14,400 feet.
49	**49.1**	Southern Rocky Mountain Foothills	This area is generally a transition between the Great Plains and the Southern Rocky Mountains. The temperature regime is mesic or frigid, and moisture regime is ustic. Characteristic native vegetation ranges from grasslands and shrubs to ponderosa pine and Rocky Mountain Douglas fir forest.
67B	**67B.1**	Central Great Plains, Southern Part	The Central High Plains, Southern Part CRA is broad, undulating to rolling plains dissected by streams and rivers. Local relief is measured in tens of feet on the plains. Soils are deep and formed in eolian and alluvial materials. Presettlement vegetation was short grass prairies. Nearly all of this area in fallow cropland rotations or rangeland. Some cropland areas are irrigated.


Meeker Park
Allenspark
Lyons
Mead
Longmont
Niwot
Firestone
Dacono
Ward
Boulder
Lafayette
Louisville
Nederland
Eldorado Springs
Coal Creek
Gilpin
Land Owner
State, County, City; Wildlife Parks & Recreation 1,858 ac
Bureau of Land Management 5,430 ac
National Park Service 30,050 ac
Other Federal 2,202 ac
Private 424,696 ac
State 3,545 ac
U.S. Forest Sevice 159,424 ac


Meeker Park
Allenspark
Lyons
Mead
Longmont
Niwot
Firestone
Dacono
Ward
Boulder
Lafayette
Louisville
Nederland
Eldorado Springs
Coal Creek
Gilpin
Elevation
(feet above sea level)
High : 14,252 ft
Low : 4,738 ft

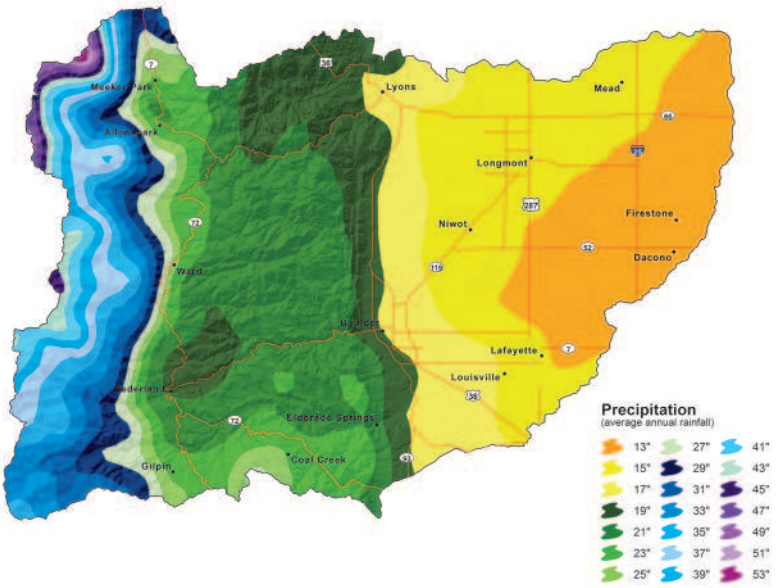

Vegetation
Alpine/Subalpine/Tundra
Coniferous Forest
Mixed Forest
Dryland Ag
Grass Dominated
Irrigated Ag
Other
Rangeland
Riparian
Shrub/Brush Rangeland
Shrub/Grass/Forb Mix Rangeland
Urban/Built Up
Water
Woodland

ST VRAIN Land Use	Total Acreage	Vegetation	Acreage
Cropland	114,316	Dryland Ag	27,306.0
		Irrigated Ag*	87,010.0
Rangeland/Grassland	183,459	Alpine Grass/Forb Mix	14,508.0
		Alpine Meadow	221.8
		Gambel Oak	3.9
		Grass Dominated	24,103.6
		Grass/Forb Mix	108,360.3
		Mesic Mountain Shrub Mix	5,249.3
		Sagebrush Community	0.5
		Sagebrush/Grass Mix	77.7
		Shrub/Grass/Forb mix	10,385.0
		Sparse PJ/Shrub/Rock Mix	1,479.0
		Subalpine Grass/Forb Mix	10,020.5
		Xeric Mountain Shrub Mix	9,049.7
Forest	261,167	Aspen	13,983.7
		Aspen/Mesic Mountain Shrub Mix	1,164.3
		Douglas Fir	13,740.0
		Douglas Fir/Aspen Mix	3,251.4
		Englemann Spruce/Fir Mix	5,874.6
		Limber Pine	2,166.8
		Lodgepole Pine	62,254.7
		Lodgepole Pine/Aspen Mix	11,684.3
		Lodgepole/Spruce/Fir Mix	27,405.6
		Pinyon Pine/Gambel Oak Mix	235.4
		Ponderosa Pine	82,523.1
		Ponderosa Pine/Aspen Mix	2,959.4
		Ponderosa Pine/Douglas Fir Mix	21,986.4
		Ponderosa Pine/Mesic Mtn Shrub	5,620.8
		Spruce/Fir/Aspen Mix	945.6
		Spruce/Fir/Lodgepole/Aspen Mix	5,082.9
		Spruce/Lodgepole Pine Mix	288.5
Riparian	7,066	Cottonwood	1,647.2
		Herbaceous Riparian	507.6
		Riparian	2,971.6
		Shrub Riparian	870.1
		Willow	1,069.6
Water	11,281	Water	11,280.7
Other	49,909	Commercial	14,893.2
		Disturbed Soil	1,448.8
		Residential	13,014.9
		Rock	1,208.0
		Snow	4,218.8
		Soil	783.5
		Talus Slopes & Rock Outcrops	14,277.2
		Urban/Built Up	64.2
~Total Watershed Acres			**627,198.1**

* Colorado Decision Support Systems Data

Precipitation

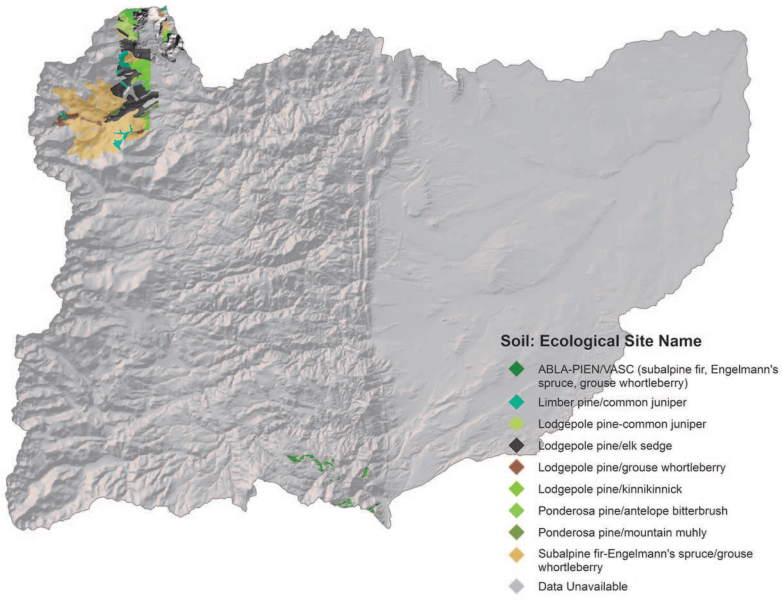
Droughts are regular visitors to the watershed as with the rest of Colorado. Statewide, in the 1900's alone, four prolonged dry spells occurred. There was one in the 1910s. Another, in the '30s, caused the dust-bowl period. The second worst drought on record in the state occurred in the mid-50s. A series of hot, dry summers following a period of scant mountain snowpack created water shortages. The fourth drought hit parts of Colorado in the late 1970s. In this century, the most severe drought since 1723 hit the state in 2002. Prior to the 1700's, researchers looking at tree ring records have found evidence of even more severe droughts, some lasting many years. Rainfall occurs as frontal storms in the spring and early summer and high intensity, convective thunderstorms in late summer. Maximum precipitation is from mid spring through late autumn. Precipitation in winter is snow.

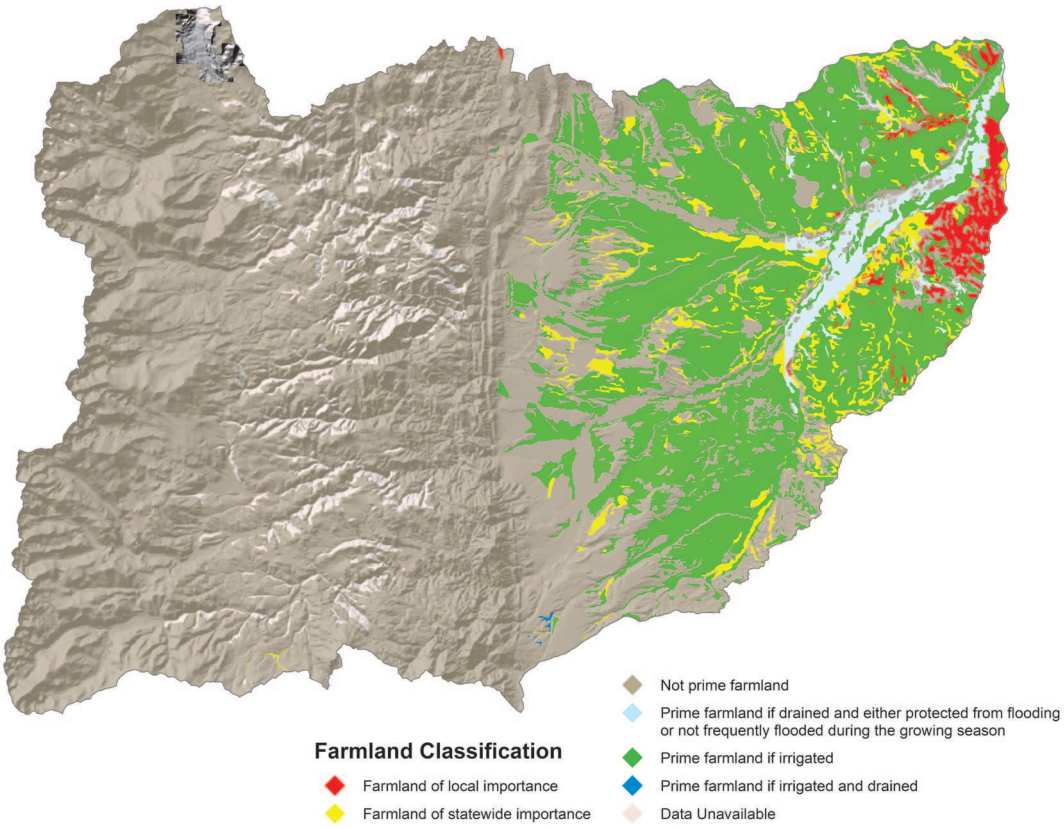


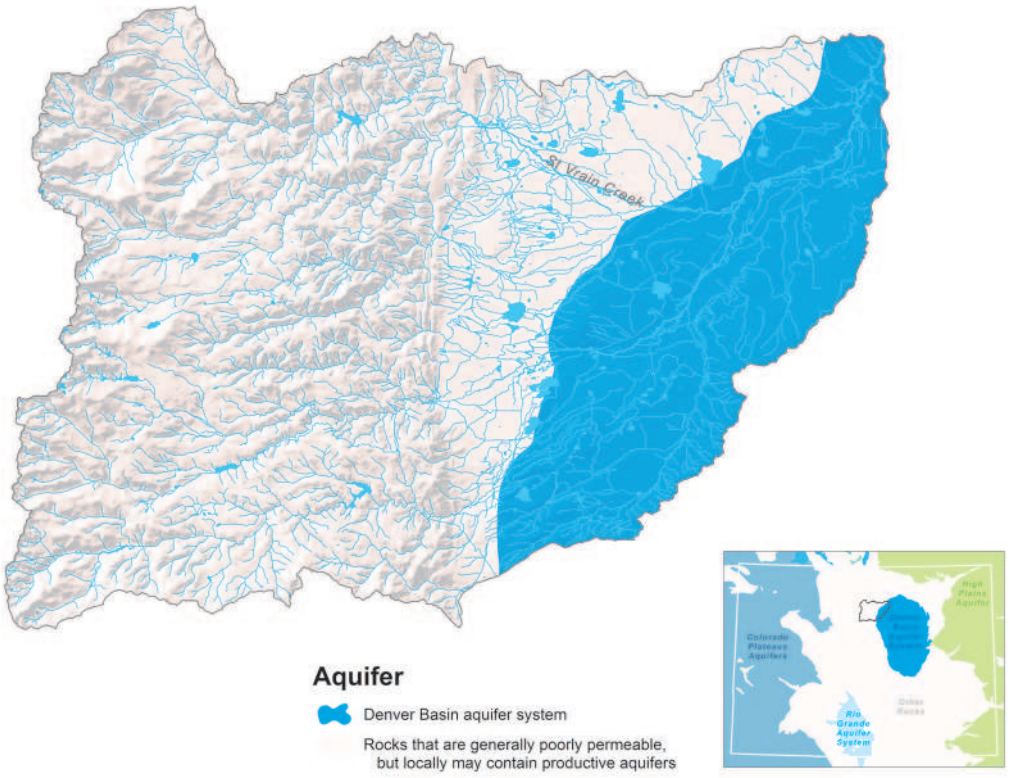
Ecological Sites

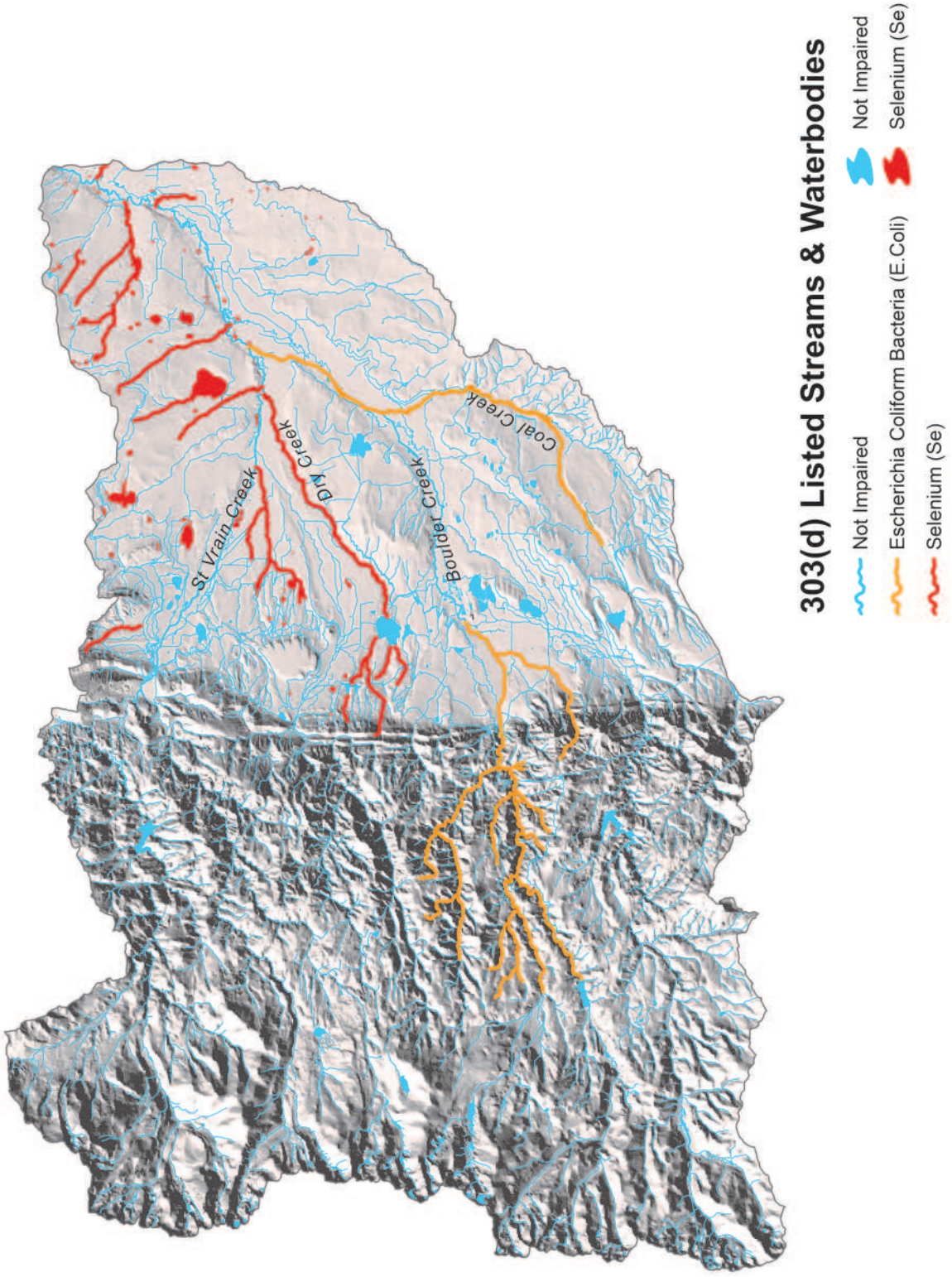
The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

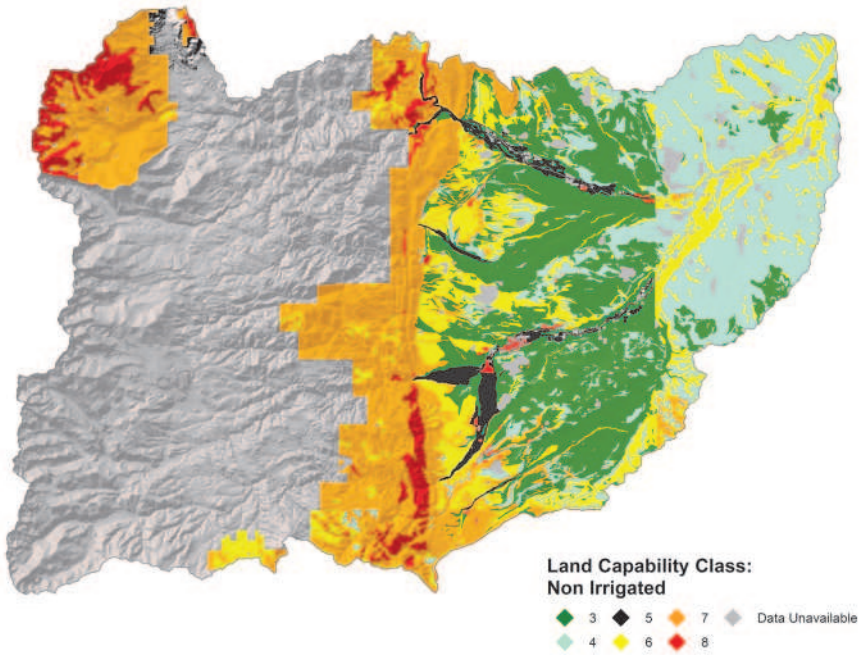
Ecological Site maps give an overall indication of the soils plant relationship in the area. More detailed descriptions of ecological sites are provided in the Field Office Technical Guide (FOTG). The FOTG is available in local offices of the Natural Resources Conservation Service (NRCS) and online at http://www.nrcs.usda.gov/technical/efotg/.

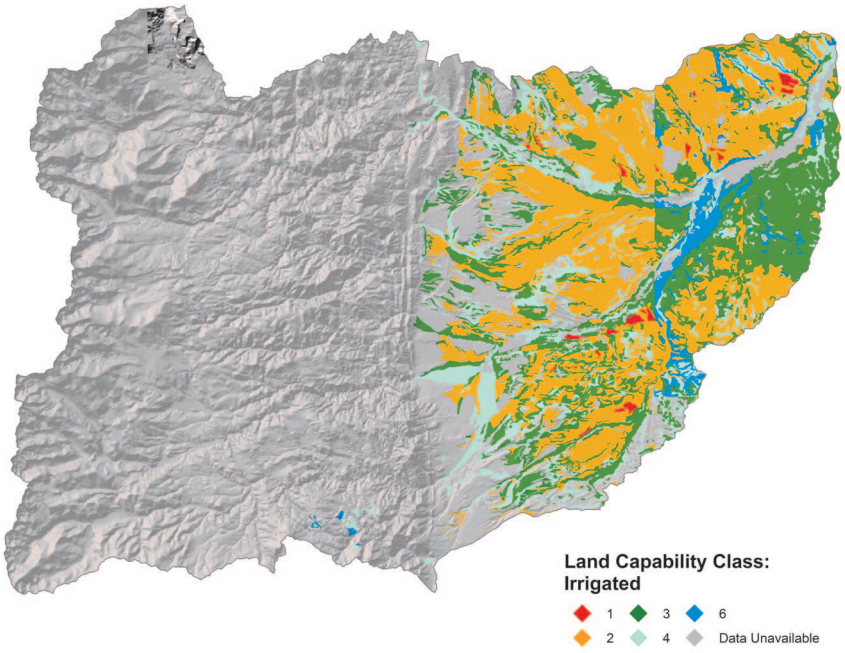



Farmland Classification
Farmland of local importance
Farmland of statewide importance
Not prime farmland
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if irrigated and drained
Data Unavailable


St Vrain Creek
Aquifer
Denver Basin aquifer system
Rocks that are generally poorly permeable, but locally may contain productive aquifers


303(d) Listed Streams & Waterbodies
Not Impaired
Escherichia Coliform Bacteria (E.Coli)
Selenium (Se)
Not Impaired
Selenium (Se)
St Vrain Creek
Old Creek
Boulder Creek
Coal Creek





Class 1- soils have few limitations that restrict their use.

Class 2 - soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 - soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

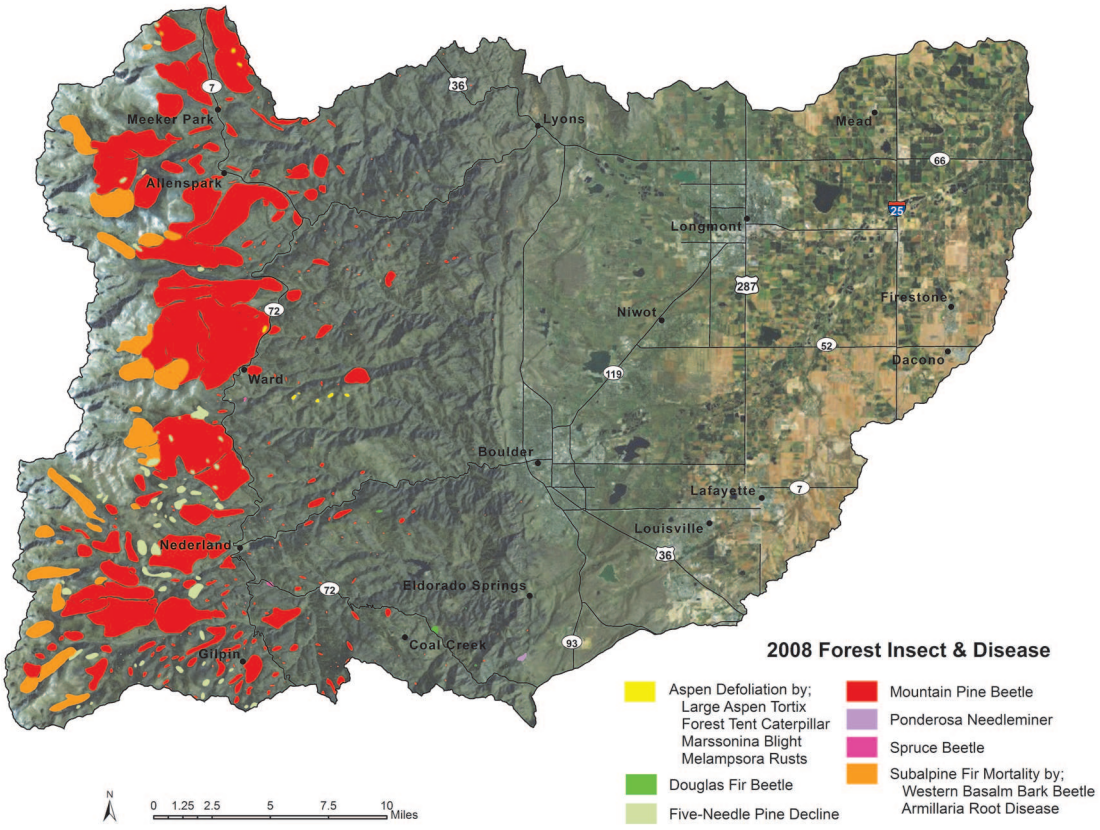
Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 - soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 - soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 - soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.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Firestone
Dacono
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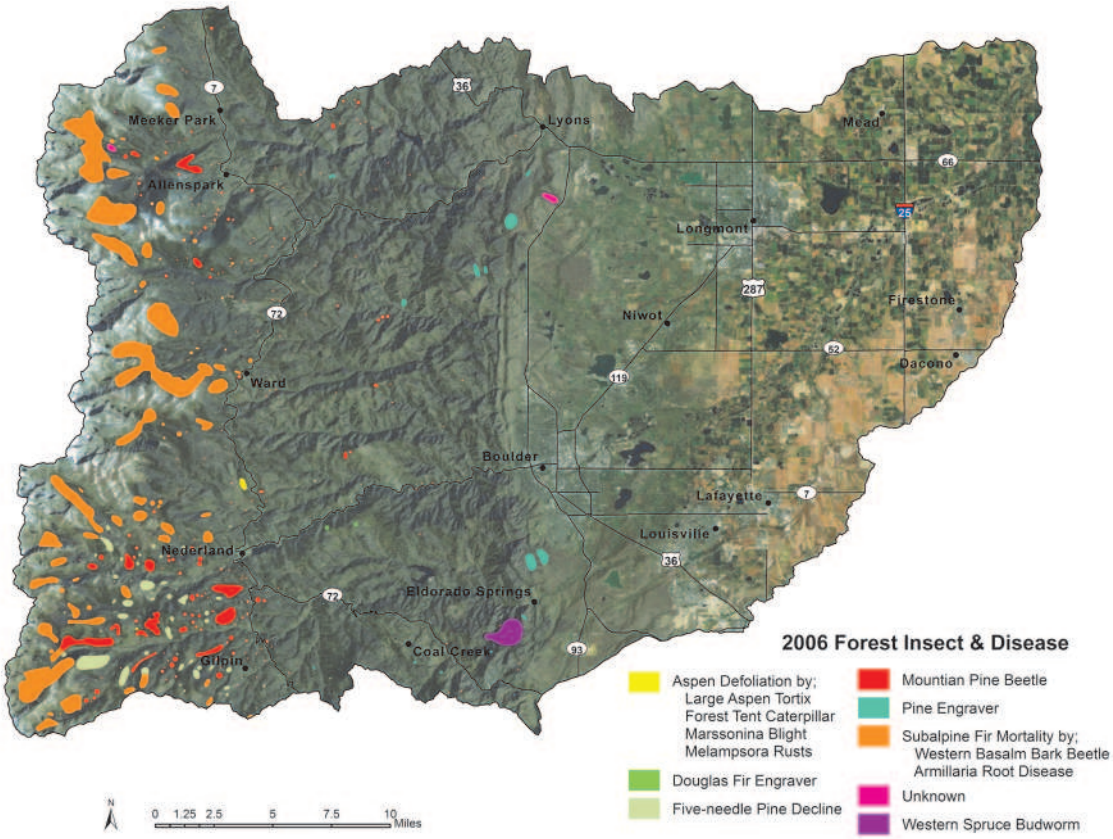
Boulder
Lafayette
Louisville
Nederland
Eldorado Springs
Coal Creek
Gilpin
2008 Forest Insect & Disease
Aspen Defoliation by; Large Aspen Tortix Forest Tent Caterpillar Marssonina Blight Melampsora Rusts
Douglas Fir Beetle
Five-Needle Pine Decline
Mountain Pine Beetle
Ponderosa Needleminer
Spruce Beetle
Subalpine Fir Mortality by; Western Basalm Bark Beetle Armillaria Root Disease
N
0 1.25 2.5 5 7.5 10 Miles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2006 Forest Insect & Disease
Aspen Defoliation by; Large Aspen Tortix Forest Tent Caterpillar Marssonina Blight Melampsora Rusts
Douglas Fir Engraver
Five-needle Pine Decline
Mountian Pine Beetle
Pine Engraver
Subalpine Fir Mortality by; Western Basalm Bark Beetle Armillaria Root Disease
Unknown
Western Spruce Budworm
N
0 1.25 2.5 5 7.5 10 Miles

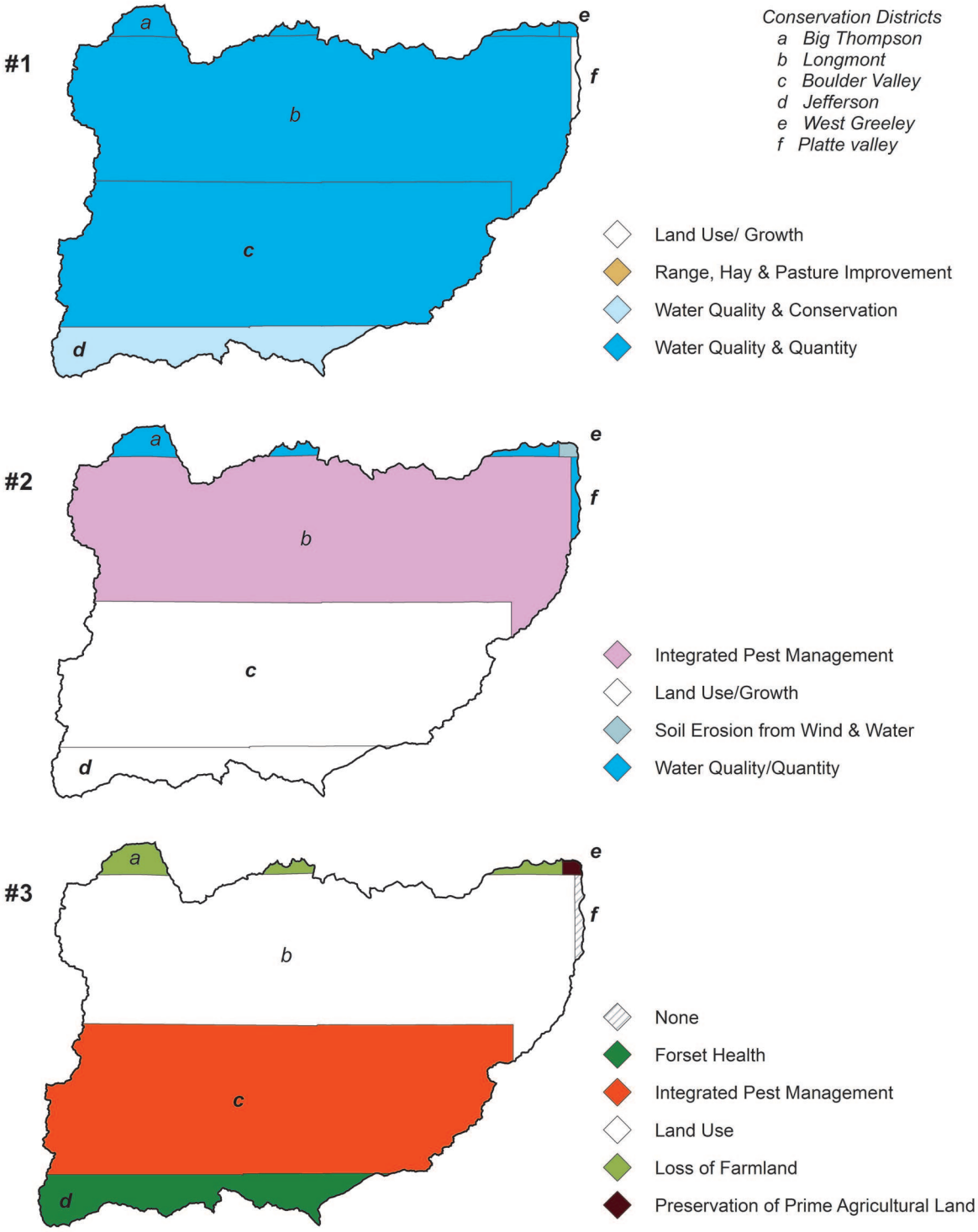
Threatened and Endangered Species and Species of Concern in the Watershed

Common Name	Scientific Name	Class	State Status	Federal Status	Comments
American Peregrine Falcon	*Falco peregrinus anatum*	Birds	**Concern**	None	Occurs in the watershed
Bald Eagle	*Haliaeetus leucocephalus*	Birds	**Threatened**	None	Occurs year round in the watershed
Black-tailed Prairie Dog	*Cynomys ludovicianus*	Mammals	**Concern**	None	Occurs in the watershed
Brassy Minnow	*Hybognathus hankinsoni*	Fish	**Threatened**	None	Occurs in the watershed
Burrowing Owl	*Athene cunicularia*	Birds	**Threatened**	None	Occurs in the watershed
Common Garter Snake	*Thamnophis sirtalis*	Reptiles	**Concern**	None	Occurs in the watershed
Common Shiner	*Luxilus cornutus*	Fish	**Threatened**	None	Occurs in the watershed
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	Fish	**Threatened**	**Threatened**	Occurs in the watershed
Iowa Darter	*Etheostama exile*	Fish	**Concern**	None	Occurs in the watershed
Mountain Plover	*Charadrius montanus*	Birds	**Concern**	None	Occurs in the watershed
Northern Leopard Frog	*Rana pipiens*	Amphibians	**Concern**	None	Occurs in the watershed
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	Mammals	**Threatened**	**Threatened**	Occurs in the watershed
Swift Fox	*Vulpes velox*	Mammals	**Concern**	None	Occurs in the watershed
Stonecat	*Noturus flavus*	Fish	**Concern**	None	Occurs in the watershed
Townsend's Big-Eared Bat	*Corynorhinus townsendii pallescens*	Mammals	**Concern**	None	Occurs in the watershed

Social Data	Boulder	Gilpin	Jefferson	Weld
Total population	271,934	4,757	519,071	223,966
Male	137,790	2,521	257,684	112,848
Female	134,144	2,236	261,387	111,118
Median age (years)	35.1	38.3	38.8	31.3
White	236,466	4,489	461,995	200,942
Black or African American	1717	25	4380	754
American Indian and Alaska Native	1878	39	2457	1465
Asian	9791	33	13581	2427
Native Hawaiian and Other Pacific Islander	90	9	65	117
Some other race	15266	73	22965	14814
Hispanic or Latino (of any race)	34940	202	66263	62792
In labor force (population 16 years and over)	156,309	3,150	293,688	120,817
Median household income (dollars)	57,502	51,942	60,944	48,763
Median family income (dollars)	77,766	61,859	73,355	57,009
Per capita income (dollars)	34,156	26,148	30,163	21,981
Families below poverty level	x	13	x	x
Individuals below poverty level	x	191	x	x
X means that value is not applicable or not available				
Farms (number)	736	26	457	3121
Land in farms/ranches (acres)	107,629	6,045	90,366	1,812,167
Average size farm/ranch (acres)	146	233	198	581
Median size farm (acres)	38	154	35	158
Average age of farmer or rancher	56.2	55.6	55.1	53.5
Net cash return from ag sales ($1,000)	4,717	-94	6,568	67,959
Cattle and calves (number)	11,000		2,000	505,000

Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts



Selected Conservation Application Data

	FY 2004	FY 2005	FY 2006	FY 2007	Total
Practices Applied					
Irrigation Water Management	965	484	851	1,219	3,519

Conservation Systems to Address Major Resource Concerns

Primary Resource Concern: Water Quality

Conservation System Description: Upgrading Sprinkler irrigation system with IWM, Crop rotation, Nutrient and Pest Mgt.

Reference Conservation System Guide Code: CO 67B.1-CR-Pivot-R-1.1

Practices	Unit	Quantity	Cost/Unit ($)	Estimated Cost ($)
Irrigation Water Management (449)* * includes re-bowl, renozzle, and IWM	Ac	15,000	34.20	513,000
Nutrient Management (590)	Ac	20,000	15	300,000
Pest Management (595)	Ac	20,000	15	300,000

Conservation System Description: Irrigation converted to sprinkler system. Sprinkler/micro irrigation system with IWM, Crop rotation, Nutrient and Pest Mgt.

Reference Conservation System Guide Code: CO 67B.1-CR-Pivot

Practices	Unit	Quantity	Cost/Unit ($)	Estimated Cost ($)
Irrigation System, Sprinkler (442)	Ac	25,000	600	15,000,000
Irrigation Water Management (449)	Ac	30,000	5	150,000
Nutrient Management (590)	Ac	15,000	11.5	175,500
Pest Management (595)	Ac	25,000	15	375,000
			Subtotal Irrigated Crops:	**$16,813,500**

General Effects, Impacts, and Estimated Costs of Application of Conservation Systems

Landuse	Resource	Measurable Effects	Non-measurable Effects	Cost ($)
Irrigated Crop	Soil		Cropland sustainability	16,813,500
			Total Costs	**$17,749,500**

FOOTNOTES/ BIBLIOGRAPHY

303(d) listed streams within the Watershed were created using data from Colorado Department of Public Health & Environments' Water Quality & Control Commission. Impaired streams are current as of April 30, 2006. For a list of all Colorado impaired streams, locations and priority ratings, visit http://www.cdphe.state.co.us/regulations/wqccregs/100293wqlimitedsegtmdls.pdf.

Threatened and Endangered Species information was gathered using data from the Colorado Division of Wildlife (CDOW) Natural Diversity Information Source (NDIS). NDIS GIS data may be downloaded at http://ndis.nrel.colostate.edu. For more information on Colorado's Endangered & Threatened Species, as well as Species of Concern, visit http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/ListOfThreatenedAndEndangeredSpecies.htm or http://mountainprairie.fws.gov/endspp/CountyLists/COLORADO.htm

Resource Concerns were identified using the Colorado Association of Conservation Districts' (CACD) long range (10 year) plans from the period of 1996-2000. Only the top three environmental resource concerns for each district were used. For more information on Colorado's Conservation Districts, visit http://www.cacd.us.

Maps were generated using Soil Survey Geographic Database (SSURGO) tabular and spatial data. SSURGO data was downloaded for the following Colorado surveys:

Adams County Area (CO001) Published 1/11/2008

Weld County S (CO618) Published 12/14/2005

Golden Area (CO641) Published 12/15/2005

Boulder County Area CO643) Published 12/21/2006

Larimer County Area (CO644) Published 1/15/2008

RooseveltArapahoeRoutt (CO645) Published 2/4/2008

RMNP (CO651) Published 1/8/2007

Georgetown Area (CO653) Published 1/8/2007

Vegetation data was generated using the Colorado Division of Wildlife's "Colorado Vegetation Classification Project" (CVCP) data. Completed in 2003, the CVCP is a landscape level vegetation dataset created using Landsat TM imagery and then formatted for GIS use. The species identified are an overview of the most common species associated in each cover type, in order of greatest occurrence. For more information on the Colorado Vegetation Classification Project, visit http://ndis.nrel.colostate.edu/coveg.

All border state (if applicable) vegetation data courtesy of the National Land Cover Dataset (NLCD). For more information visit http://www.mrlc.gov/mrlc2k_nlcd.asp

Common Resource Area (CRA), a subdivision of the Major Land Resource Area (MLRA), is a geographical area where resource concerns, problems, or treatment needs are similar. Geographic boundaries of a CRA are determined by landscape conditions, soil, climate, human considerations and other natural resource information. For more information on Common Resource Areas visit http://soils.usda.gov/survey/geography/cra.html.

Average Annual Precipitation data was developed through a partnership between the Natural Resources Conservation Service's (NRCS) National Water and Climate Center (NWCC), the National Cartography and Geospatial Center (NCGC), and the PRISM (the Parameter-elevation Regressions on Independent Slopes Model) group at Oregon State University (OSU), developers of PRISM. Mean annual precipitation maps were developed calculating averages of rainfall for the period of 1961-1990. .

Land Ownership (status,07/22/2006 dataset) data was obtained from the Bureau of Land Management, Colorado State Office. For more information, visit http://www.blm.gov/co/st/en/BLM_Programs/geographical_sciences/gis.html

Relief & Elevation maps were created using the National Elevation Dataset (NED), 30m Digital Elevation Model (DEM) raster product assembled by the U.S. Geological Survey (USGS